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NUTRITIONAL HEALTH STATUS OF NORTH INDIAN ADULTS

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ABSTRACT

Poor health affects both high and low income group people. Low income group people are at risk for under nutrition while high and middle income group people are at greater risk for obesity. Pilot study was conducted on 50 respondents of North India to study their nutritional status and food consumption pattern . Body mass index of respondents was less than 25.Data was collected using 24 hr recall method and values were calculated using Diet Soft Software. Data was analyzed using SPSS 20 version. Males were 42% and females were 58%. Mean age of the respondents was 23 years and their income was more than 1 lakh p.a. Intake of energy, protein, fat, calcium and zinc was significantly higher than RDA in both males and females. Intake of iron was less than RDA in females. Vit A was significantly less than RDA in both males and females .Among food consumption pattern intake of fruits and vegetables was significantly less than the recommended amount while intake of other food groups was much higher than recommended amount..Life style modification and nutrition education can help in improving the nutritional status of adults otherwise they will also suffer from lifestyle diseases in future.

Key Words: Health, RDA, Food Consumption Pattern, Nutrients.

INTRODUCTION

Nutrition is the intake of food required for the body dietary needs. Well balanced diet is the corner stone of good health. Poor nutrition can lead to reduced immunity, increased susceptibility to disease, impaired physical and mental development and reduced productivity (Popkin, 2001, Smit, 2001). Malnutrition is closely linked to death and disability worldwide (www.who.int/nutrition). The causes of malnutrition are directly related to inadequate dietary intake. Fifty-one percent of the adult population in India is suffering from malnutrition (www.healthssues india.com/malnutrition). Many studies have shown a significant association between nutrition and cardiovascular diseases, cancer, diabetes and other age related and life style diseases.(Katia et al. 2009) Rapid socioeconomic development accompanied by increase urbanization and westernization have changed the dietary practices and life styles of individuals(Agrahar et, al.2013). Eating pattern of Indians has shifted from traditional diet to a westernized diet. This in turn can lead to some increase in energy intake. There is reduction in physical activity and increase in work related stress.(NNMB Report, Castetbon 2009,). This change showed higher incidences of degenerative diseases like obesity, diabetes mellitus, heart diseases, hypertension etc. NFHS-2(1989-99) data showed decline in prevalence of under nutrition and increase in prevalence of over nutrition in adults. . Consumption of edible oil is also increased in Indian diet. India has adverse agro climatic regions, ethnic multiplicity, socio cultural practices, life styles and eating habits which vary from state to state and district to district.(Vashisth et, al. 2005) There is a need for the assessment of the nutritional status to obtain a clear view of malnutrition in various regions of country. This will help in identifying the causes of problem and solutions to overcome the problem of malnutrition. Keeping this in view a study was planned to assess the nutritional health status of North Indians.

MATERIAL AND METHOD

Fifty respondents from west and north Delhi who had age between 18 to 45 years were chosen for detailed dietary assessment. Data collection was done through questionnaire method. The questionnaire was developed and information on socio-economic status was gathered. After the base information was collected, nutritional survey was carried out by the 24 hour dietary recall method. The quantity of food consumed was converted into their raw equivalents. Standardized utensils were used for conversion. In this procedure the respondents were asked to list all the foods and beverages consumed during the previous day. The nutritional data collected were analyzed using Diet Soft software which gave individual nutrient breakup of each food consumed

by respondents in past 24 hours. The values obtained were compared with Recommended Dietary Allowance (RDA) values for Indians (Gopalan et, al. 2009,I.C.M.R, 2009 and I.C.M.R.1981). Data was analyzed using SPSS 20 Version

RESULTS AND DISCUSSION

Nutrient intake and food consumption pattern of North Indian adults was assessed to determine the nutritional health status of the respondents. Socioeconomic status of the respondents is shown in table 1.

Table 1- Socioeconomic status of Adults

Number of respondents		**50**
Income group		**Middle and high**
Age	>30 years	14%
	<30 years	86%
Religion	Hindu	74%
	Muslim	8%
	Sikh	12%
	Christian	3%
Marital status	Single	6%
	Married	34%
Family type	Joint	50%
	Nuclear	50%
Sex	Male	42%
	Female	58%

All the 50 respondents were from the middle and high income group and their income was more than 1 lakh per annum. Mean age of the respondents was 23 years . Body mass index of respondents was less than 25. Maximum numbers of adults (80%) were from young age group i.e. less than 30 years and 14% were more than 30 years in age. Among the respondents surveyed 74% of adults were Hindu followed by Sikhs (12%), Muslim (8%) and Christians (3%)/. On analyzing the marital status it was found that 66% respondents were single and 34% were married. Equal percentage of respondents (50%) lived in nuclear and joint families. In the study 42% were males and 58% were females.

Food consumption pattern of males is depicted in table 2 and of females in table 3. Diet of males and female was characterized by intake of cereals, pulses milk and milk products fruits roots and tubers vegetables and fats and oils. Consumption of milk and milk products in both sex was significantly ($p \leq 0.05$) less than recommended dietary allowances (ICMR 1981). In females intake of roots and tubers are significantly higher than RDA. Intake of fats and oils, vegetables, cereals, pulses and fruits in both sex are higher than recommended amount but the difference was not significant. Intake of fruits and pulses was less in males as compare to females.

Table 2- Food consumption pattern of Males

Food Group	**Recommended Amount**	**Mean ± SD**	**Level of significance (p value ≤ 0.05)**
Cereals (gm)	350	400 ± 166.4	NS
Pulses (gm)	70	74.6 ± 63.2	NS
Milk and milk Products (gm)	600	277.6 ± 187.4	S
Fruits (gm)	60	60.9 ± 88.1	NS
Roots and Tubers	75	146.2 ± 101.2	NS
Other vegetables (gm)	75	102.3 ± 101.7	NS
Fats and oils(gm)	35	61.1± 40.9	NS

S= Significant, NS= Non significant

Table 3- Food consumption pattern of Females

Food Group	**Recommended Amount**	**Mean ± SD**	**Level of significance (p value ≤ 0.05)**
Cereals (gm)	260	286.5± 86.4	NS
Pulses (gm)	60	70.6 ± 61.2	NS
Milk and milk Products (gm)	400	264.6 ± 183.2	S
Fruits (gm)	60	125.5 ± 138.14	NS
Roots and Tubers	50	134.14± 92.6	S
Other vegetables (gm)	75	92.3 ±93.3	NS
Fats and oils(gm)	30	50 ± 34.27	NS

S= Significant, NS= Non significant

Mean daily intake of nutrients of males and females is shown in table 4 and 5. In males intake of fat was significantly higher than RDA (ICMR 2009) where as non significant difference was found in the intake of energy protein calcium iron, zinc vitamin A, vitamin C. Intake of zinc and vitamin A was less than RDA. In females intake of vitamin B_{12}, vitamin A, zinc and iron was significantly less than RDA.

Table 4 – Mean daily intake of nutrients of males

Nutrients	RDA	Mean ± SD	Level of significance (p value ≤ 0.05)
Energy (Kcal/d)	2320	2569.2 ± 973.7	NS
Proteins (gm/d)	60	73.2 ± 27.8	NS
Fats(gm/d)	25	93.6 ± 42.4	S
Calcium (mg/d)	600	844.4 ± 355.1	NS
Iron (mg/d)	17	24.1 ± 9.2	NS
Zinc (mg/d)	12	9.9 ± 3.6	NS
Vitamin A (µg/d)	600	358.9 ± 668.8	NS
Vitamin C (mg/d)	40	110.3 ± 93.2	NS
Vitamin B_{12} (µg/d)	1	1.7 ± 76.2	NS

S= Significant, NS= Non significant

Table 5 – Mean daily intake of nutrients of Females

Nutrients	RDA	Mean ± SD	Level of significance (p value ≤ 0.05)
Energy (Kcal/d)	1900	2108.2 ± 913.04	NS
Proteins (gm/d)	55	63.9 ± 34.5	NS
Fats(gm/d)	20	74.2 ± 52	S
Calcium (mg/d)	600	796.7 ± 399.3	NS
Iron (mg/d)	21	17.9 ± 8.4	NS
Zinc (mg/d)	10	7.9 ± 4.6	NS
Vitamin A (µg/d)	600	233.8 ± 322.2	S
Vitamin C (mg/d)	40	80.3 ± 52.1	S
Vitamin B_{12} (µg/d)	1	0.2 ± 0.25	S

S= Significant, NS= Non significant

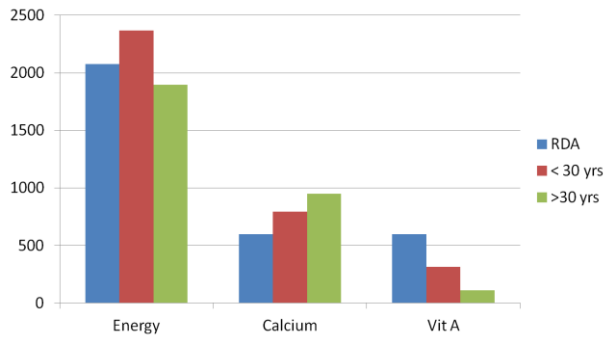

Figure 1- Age wise energy, calcium and vitamin A intake of respondents.

Age wise data is illustrated in figure 1 and 2. Intake of energy, protein, fat, iron, vitamin B_{12} was higher in less than 30 years age group as compare to greater than 30 years age group. Intake of calcium and vitamin C was more in greater than 30 year's age group. Intake of zinc and vitamin A was lower than RDA in both age groups

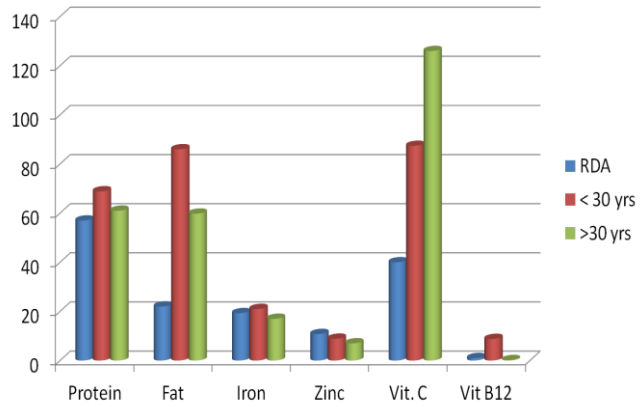

Figure 2 - Age wise nutrient intake of respondents

DISCUSSION

Poor food quality, insufficient food intake, lack of nutritional knowledge, repeated infectious diseases are responsible for malnutrition in individuals. Growth and development of any country is influenced by the health condition of its population. Malnutrition can hinder the growth and development of country. Dietary surveys are the important parameters for assessment of nutritional status of population of any country.

The present study was conducted to assess the nutritional health status of adults of North India. Intake of cereals was higher than recommended amounts in both males and females. In North India cereals are the major food of people . Intake of pulses was also satisfactory in both sexes. In vegetarian diet pulses are one of the major sources of protein. Consumption of milk and milk products is less than the recommended amount and it should be increased in daily diet as it is a good source of major nutrients. Intake of fruits by males can be increased as it is at the borderline .Less intake of fruits is also shown by NNMB reports in all states of India in both men and women. Fruits are the good source of vitamins, minerals, pigments and antioxidants etc. many studies have shown that 30-40% of all cancers can be prevented by life style and dietary measures alone (Donaldson , 2004). Intake of roots and tubers was more than the recommended amount in both sexes. Data from NNMB surveys also showed increased intake of fats and reduced intake of iron by women. Excess intake might be responsible for overweight, obesity and other degenerative diseases as they contain high amount of starches. Intake of fats and oils can be reduced. Excess of these can increase the incidence of stroke, heart diseases etc. On an average mean intake of energy, fat, calcium was significantly higher than RDA in adults. Intake of

protein, iron, and vitamin B_{12} can be increased specially in women to improve their health status.VitaminB_{12} is an important nutrient for genetic stability, DNA repair, carcinogenesis and cancer therapy(Donaldson, 2004).

The use of process foods, ready to eat foods and eating outside deteriorates the health of individuals. These should be taken in limited amount. Increase purchasing power of high and middle income group, disinterest in preparation of food, lack of time for food preparation by working women are some of the major factors responsible for junk food consumption. These types of food are rich in fats and carbohydrates specially refined starch and sugars. Concentrated sugar and refined flour products make up a large proportion of carbohydrate intake. These are also called as low nutrient and high calorie foods.(NFHS-2).Data from NNMB reports also show high over nutrition in north India specially in Delhi and Punjab. For healthy life good diet and moderate physical activity is must (Kosulwat, 2002, WHO 2007)). Careful menu planning and intake of 70-80% of recommended calories with necessary amount of vitamin, minerals and other nutrients helps in maintain normal body weight.

CONCLUSION

Food consumption pattern and nutrient intake of north Indian adults indicate that intake of fats, carbohydrates and roots and tubers is higher than recommended amount .Intake of these nutrients and food groups should be restricted. Sedentary life style, wrong eating habits are the major factors contributing to increased prevalence of obesity and other diet related diseases .Changes in food intake should be strictly monitored and can be changed through behavior modification and by healthy eating patterns and lifestyles.

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